UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
2002/01501

May 20, 2003

Mr. Lawrence C. Evans
U.S. Army Corps of Engineers
Chief, Environmental Resources Branch
P.O. Box 2946
Portland, OR 97208-2946

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Wahkeena Creek/Interstate 84 Fish Passage Project, Multnomah County, Oregon (Corps No. 200201000)

Dear Mr. Evans:

Enclosed is a biological opinion (Opinion) pursuant to section 7 of the Endangered Species Act (ESA) prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries), on the effects of proposed Wahkeena Creek Fish Passage Interstate 84 project, Multnomah County, Oregon. In this Opinion, NOAA Fisheries concludes that the proposed action is not likely to jeopardize the continued existence of ESA-listed Lower Columbia River (LCR) steelhead (*Oncorhynchus mykiss*), LCR chinook salmon (*O. tshawytscha*), and Columbia River chum salmon (*O. keta*). As required by section 7 of the ESA, NOAA Fisheries included reasonable and prudent measures with non-discretionary terms and conditions that NOAA Fisheries believes are necessary to minimize the impact of incidental take associated with this action.

This document also serves as consultation on essential fish habitat for chinook and coho salmon pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act and implementing regulations at 50 CFR Part 600.

If you have any questions regarding this consultation, please contact Art Martin of my staff in the Oregon Habitat Branch at 503.231.6848.

Sincerely,

Michael R Crouse
For

D. Robert Lohn
Regional Administrator

cc: Molly Cary, ODOT
Diana Hwang, USFWS
Tom Murtaugh, ODFW

Endangered Species Act - Section 7 Consultation
Biological Opinion

&

Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat Consultation

Wahkeena Creek/Interstate 84 Fish Passage Project,
Multnomah County, Oregon
(Corps No. 200201000)

Agency:	U.S. Army Corps of Engineers, Portland District
Consultation Conducted By:	NOAA's National Marine Fisheries Service, Northwest Region
Date Issued:	May 20, 2003
Issued by:	for Michael R Crouse D. Robert Lohn Regional Administrator
Refer to:	**2002/01501**

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1. INTRODUCTION

1.1 Background

As part of a settlement agreement between NOAA's National Marine Fisheries Service (NOAA Fisheries), the Oregon Department of Transportation (ODOT), and the Oregon Department of Fish and Wildlife (ODFW) to mitigate for a fish kill that occurred on October 9, 2000, while ODOT Maintenance Personnel were cleaning the Tumalt Creek Culvert, ODOT agreed to provide fish passage at the Wahkeena Creek/Interstate 84 culvert in the Columbia River Gorge. ODOT is the project applicant and the U.S. Army Corps of Engineers (COE) is the lead Federal agency through the issuance of a 404 Fill and Removal Permit process for the proposed action.

On December 27, 2002, NOAA Fisheries received a letter from the COE requesting formal consultation on the Wahkeena Creek/Interstate 84 Fish Passage Project. The proposed action is the retrofit and repair of the existing Wahkeena Creek Culvert under Interstate 84. In the December 27, 2002, letter and accompanying biological assessment (BA), the COE determined that the following 10 listed evolutionarily significant units (ESUs) of Columbia River basin salmonids may occur within the project area: Snake River (SR) sockeye salmon (*Oncorhynchus nerka*), SR spring/summer chinook salmon (*O. tshawytscha*), SR fall-run chinook salmon, Lower Columbia River (LCR) steelhead (*O. mykiss*), Upper Columbia River (UCR) steelhead, SR steelhead, Middle Columbia River (MCR) steelhead, Columbia River (CR) chum salmon (*O. keta*), LCR chinook salmon, and UCR spring run chinook salmon. Subsequently, the COE determined that the proposed action is "likely to adversely affect" (LAA) LCR chinook salmon, LCR steelhead, and CR chum salmon, and "not likely to adversely affect" (NLAA) the seven remaining ESUs of listed salmonids. Based on information provided by the COE, NOAA Fisheries concurs with the COE's determination that the proposed project is NLAA for MCR steelhead, UCR steelhead, SR Basin steelhead, SR sockeye salmon, UCR spring-run chinook, SR spring/summer-run chinook, and SR fall-run chinook because the physical effects of the proposed project are not expected to extend downstream in a way that would affect migratory conditions for those ESUs. References and dates for the listing status and ESA section 4(d) take prohibitions of CR chum salmon, LCR steelhead, and LCR chinook salmon are provided in Table 1.

The objective of this consultation is to determine whether the proposed action is likely to jeopardize the continued existence of CR chum salmon, LCR steelhead, or LCR chinook salmon, and to explain why NOAA Fisheries believes the proposed action will adversely effect essential fish habitat (EFH).

1.2 Proposed Action

The proposed action includes the retrofit for fish passage of the existing Wahkeena Creek Culvert under Interstate 84 (MP 30.79) with a roughened chute design. The proposed action also includes repair of the cracks, separations, and scour voids along and under the existing culvert.

Table 1. References for additional background on listing status, biological information, and critical habitat elements for the listed and proposed species addressed in this Opinion.

Species	Listing Status	Critical Habitat	Protective Regulations	Biological Information, Historical Population Trends
Columbia River chum salmon	March 25, 1999; 64 FR 14508, Threatened	February 16, 2000; 65 FR 7764	N/A	Johnson *et al.* 1997; Salo 1991
Lower Columbia River steelhead	March 19, 1998; 63 FR 13347, Threatened	February 16, 2000; 65 FR 7764	N/A	Busby *et al.* 1995; 1996
Lower Columbia River chinook salmon	March 24, 1999; 64 FR 14308, Threatened	February 16, 2000; 65 FR 7764	N/A	Myers *et al.*1998; Healey 1991

The existing Wahkeena Creek Culvert is a triple reinforced concrete box culvert (RCBC). Each of the three barrels is 1.8 meter (m) by 1.8 m and 51.2 m in length and at 0.4% slope. The last six m section of the culvert at the outlet end is tipping out as the result of a large scour void beneath the culvert outlet. The scour hole at the culvert outlet extends approximately 15 m downstream and has resulted in a 0.6 to one m hydraulic jump, a partial upstream fish passage barrier for adult salmonids and a total upstream fish passage barrier for juveniles.

The project BA includes a set of best management practices (BMPs) designed to minimize adverse effects on steelhead, salmon and their habitats. These BMPs are described on pages 24-27 of the BA. Specific BMPs for in-water work, bank work, erosion control, hazardous materials, and site-specific conservation measures are included. NOAA Fisheries regards these BMPs as integral components of the project and considers them to be part of the proposed action.

All in-water work activities will occur during the ODFW-preferred in-water work timing guideline of July 15 through August 31. Any extensions or alterations to the standard in-water work timing will require the written approval of a NOAA Fisheries biologist.

Direct and indirect effects to listed species will occur at the project site and may extend upstream or downstream based on the potential for sediment and pollutant discharge and the extent of riparian habitat modifications. Indirect effects to listed species may occur throughout the watershed where actions described in this Opinion lead to additional activities or affect ecological functions contributing to stream degradation. As such, the action area for the proposed activities includes the immediate riverbed and banks where the proposed action will occur, and those areas upstream and downstream that may reasonably be affected, temporarily or in the long term. For the purposes of this Opinion, the action area is defined as the streambed and streambank of Wahkeena Creek, also known as Multnomah Creek, extending upstream to the project disturbance limits and downstream approximately 200 m to its confluence with the Columbia River. Other areas of the Columbia River are not expected to be directly affected.

1.2.1 Roughened Chute Retrofit and Culvert Repair

A gravity-fed, temporary water management system (TWMS) would be implemented to effectively dewater the work area and maintain downstream fish passage during repair of the culvert outlet and construction of the roughened chute culvert retrofit. The TWMS will consist of a series of sandbag (or similar material) cofferdams and temporary bypass pipes to collect and bypass Wahkeena Creek flow around the isolated work area. The TWMS will need to be staged to allow for each of the three culvert barrels to be dewatered during bed retention sill installation. Before and during instillation of the TWMS, a qualified ODFW or ODOT fish biologist will remove any fish trapped within the isolated work area using methods that may include seining, dipnetting, and electrofishing.

The proposed roughened chute fish passage design will require the filling of the existing scour pool at the culvert outlet with a gradation of fill ranging in size from 1800 kg angular boulders to

a variety of fines. The larger boulders will provide the structural stability through boulder to boulder contact while the smaller materials and fines will be hydraulically and mechanically compacted to fill voids, to establish and maintain surface flow through the channel. An estimated 306 cubic m of fill will be placed within the ordinary high water mark of the Wahkeena Creek channel to construct the roughened chute as designed. Fill compaction will be achieved by mixing materials with the equipment bucket and a high pressure hose to wash fines into channel voids. An attempt will be made to incorporate large woody materials for habitat enhancement during construction if channel stability can be maintained. Due to the experimental nature of roughened chute designs, monitoring and remedial activities will be part of the proposed action.

A temporary access road may need to be constructed to facilitate access for equipment and materials during construction. If a temporary access road is needed, vegetation impacts would be minimized and the existing slope would be restored and replanted upon project competition.

The new roughened chute channel will be constructed at an average slope of 19% and elevation of 300 millimeters (mm) above the culvert outlet apron to backwater the creek flows through the culvert barrels and enhance the effectiveness of the baffle/bed retention sills. A full-spanning, 150 mm high, angle-iron sill will be constructed at the end of the existing outlet apron to help maintain adequate water depth on the apron and transition the creek flow from the culvert into the roughened chute channel. A series of 900 mm wide by 300 mm high plastic baffle/bed retention sills will then be placed at five m intervals through the existing barrels. The objective of these baffles/bed retention sills will be helping concentrate the water depth at low flow, provide hydraulic roughness and refugia at a variety of flows, and enhance the formation of a stream simulated bottom along the culvert barrels through accumulation of bedload.

Concurrent with implementation of the TWMS and construction of the roughened chute retrofit design, repairs to the existing culvert will occur. Cracks and holes in the culvert will be sealed with grout and the tilting culvert apron will be stabilized by pumping concrete into the void under the culvert apron.

2. ENDANGERED SPECIES ACT

2.1 Biological Opinion

2.1.1 Biological Information and Critical Habitat

Based on typical juvenile out-migration timing for steelhead and chinook (DeHart 2001 and Dawley *et al.* 1986) at Bonneville Dam (RM 146) and at Jones Beach (RM47), NOAA Fisheries expects that some juvenile salmonids may be present in the project area at its confluence with the Columbia River during the proposed construction period. The proposed action would occur within designated critical habitats for listed species.

The action area is defined by NOAA Fisheries regulations (50 CFR 402) as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action". The action area is defined as the streambed and streambank of Wahkeena Creek, also known as Multnomah Creek, extending upstream to the project disturbance limits and downstream approximately 200 m to its confluence with the Columbia River. Thus, the action area includes designated critical habitat, specifically as a migration corridor, for various listed salmonids within the Columbia River (RM 135). It may also serve as a feeding and rearing area for juvenile LCR chinook salmon and LCR steelhead. Essential features of the area for the species are: Substrate, water quality, water quantity, water temperature, water velocity, cover/shelter, food (juvenile only), riparian vegetation, space, and safe passage conditions (50 CFR 226).

2.1.2 Evaluating Proposed Actions

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). NOAA Fisheries must determine whether the action is likely to jeopardize the listed species and/or whether the action is likely to destroy or adversely modify designated critical habitats. This analysis involves the initial steps of (1) Defining the biological requirements and current status of the listed species; and (2) evaluating the relevance of the environmental baseline to the species' current status.

Subsequently, NOAA Fisheries evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NOAA Fisheries must consider the estimated level of mortality attributable to: (1) Collective effects of the proposed or continuing action; (2) the environmental baseline; and (3) any cumulative effects. If NOAA Fisheries finds that the action is likely to jeopardize the listed species, NOAA Fisheries must identify reasonable and prudent alternatives for the action.

Furthermore, NOAA Fisheries evaluates whether the action, directly or indirectly, is likely to destroy or adversely modify the listed species' designated critical habitat. NOAA Fisheries must determine whether habitat modifications appreciably diminish the value of critical habitat for both survival and recovery of the listed species. NOAA Fisheries identifies those effects of the action that impair the function of any essential element of critical habitat. If NOAA Fisheries concludes that the action will destroy or adversely modify critical habitat, it must identify any reasonable and prudent measures available.

For the proposed action, a jeopardy analysis by NOAA Fisheries considers direct or indirect mortality of fish attributable to the action. A critical habitat analysis by NOAA Fisheries considers the extent to which the proposed actions impair the function of essential elements necessary for migration, spawning, and rearing salmon under the existing environmental baseline.

2.1.2.1 Biological Requirements

The first step in the methods NOAA Fisheries uses for applying the ESA section 7(a)(2) to listed salmonids is to define the species' biological requirements that are most relevant to each consultation. The NOAA Fisheries also considers the current status of the listed species taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NOAA Fisheries starts with the determinations made in its decision to list the species for ESA protection and also considers new data available that is relevant to the determination.

The relevant biological requirements are those necessary for the listed species to survive and recover to a naturally-reproducing population level, at which time protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance its capacity to adapt to various environmental conditions, and allow it to become self-sustaining in the natural environment.

For this consultation, the biological requirements are improved habitat characteristics that function to support successful rearing and migration. The current status of the listed species, based upon their risk of extinction, has not significantly improved since the species were listed.

2.1.2.2 Environmental Baseline

Columbia River

The most recent evaluation of the environmental baseline for the Columbia River is part of the NOAA Fisheries Biological Opinion for the Federal Columbia River Power System (FCRPS) issued in December 2000. This biological opinion assessed the entire Columbia River system below Chief Joseph Dam and downstream to the farthest point (the Columbia River estuary and nearshore ocean environment) at which listed salmonids are influenced. For a detailed evaluation of the environmental baseline of the Columbia River Basin please refer to the FCRPS bological opinion (NMFS 2000).

The quality and quantity of freshwater habitats in much of the Columbia River basin have declined dramatically in the last 150 years. Forestry, farming, grazing, road construction, hydrosystem development, mining, and urbanization have radically changed the historical habitat conditions of the basin.

Water quality in streams throughout the Columbia River basin has been degraded by human activities such as dams and diversion structures, water withdrawals, farming and grazing, road construction, timber harvest activities, mining activities, and urbanization. Sediment and contaminants from the tributaries settle in mainstem reaches and the estuary and contribute to poor water quality. Temperature alterations affect salmonid metabolism, growth rate, spawning success, and disease resistance, as well as the timing of adult migrations, fry emergence, and smoltification. Many factors can cause high stream temperatures, but they are primarily related to land-use practices rather than point-source discharges. Loss of wetlands and increases in

groundwater withdrawals have contributed to lower base-stream flows, which in turn contribute to temperature increases. Channel widening and land uses that create shallower streams also cause temperature increases.

Pollutants also degrade water quality. Salmon require clean gravel for successful spawning, egg incubation, and emergence of fry. Fine sediments clog the spaces between gravel and restrict the flow of oxygen-rich water to the incubating eggs. Excess nutrients, low concentrations of dissolved oxygen, heavy metals, and changes in pH also directly affect the water quality for salmon and steelhead.

Water quantity problems are also a significant cause of habitat degradation and reduced fish production. Withdrawing water for irrigation, urban, and other uses can increase temperatures, smolt travel time, and sedimentation. Return water from irrigated fields can introduce nutrients and pesticides into streams and rivers. On a larger landscape scale, human activities have affected the timing and amount of peak water runoff from rain and snowmelt. Many riparian areas, flood plains, and wetlands that once stored water during periods of high runoff have been developed. Urbanization paves over or compacts soil and alters the volume and timing of runoff reaching rivers and streams.

The Columbia River estuary also has been changed by human activities. Historically, the downstream half of the estuary was a dynamic environment with multiple channels, extensive wetlands, sandbars, and shallow areas. The mouth of the Columbia River was about four miles wide. Today, navigation channels have been dredged, deepened and maintained, jetties and pile-dike fields have been constructed to stabilize and concentrate flow in navigation channels, marsh and riparian habitats have been filled and diked, and causeways have been constructed across waterways. These actions have decreased the width of the mouth of the Columbia River to 3.2 km and increased the depth of the Columbia River channel at the bar from less than six to more than 16 m.

In the action area for the proposed project, river km 204-206, the environmental baseline has been further degraded by human activity. This area consists of constructed highway embankments in various states of failure along the Oregon shore. The riparian area in this reach of the Columbia River contains little cover and vegetation. The development of this area contributes to the degraded conditions of the Columbia River, including reduced water quality, increased water temperature, altered timing and quantity of runoff, and decreased riparian cover and habitat refugia.

Wahkeena Creek

Wahkeena Creek flows from a spring just above Wahkeena Falls. The Wahkeena Creek channel, below the falls, flows about 0.3 km to its confluence with Multnomah Creek just above the Interstate 84 culvert. The channel geometry has been greatly altered by the adjacent railroad fill and culvert, the historic Highway 30 bridge, Benson State Park and culvert, and by a water diversion structure that historically collected and diverted Wahkeena Creek flow into an adjacent pond.

Because the entire drainage of Wahkeena Creek is within the Columbia River Gorge National Senic Area (CRGNSA), the riparian habitat is mostly intact and functional; facilitating adequate water quality, water quantity and complex habitat features capable of supporting reproducing anadromous fish populations.

Multnomah Creek

The Multnomah Creek drainage is much larger than the Wahkeena Creek drainage and flows approximately 4.3 km to its confluence with Wahkeena Creek just above the Interstate 84 culvert. The channel geometry has been greatly altered below Multnomah Falls by the adjacent railroad fill and bridge, the historic Highway 30 bridge, the Multnomah Falls Lodge and parking area, Benson State Park, and by the construction of Interstate 84 that essentially rechanneled Multnomah Creek through Benson Lake to its artificial confluence with Wahkeena Creek.

The ODOT, in cooperation with the Union Pacific Railroad and the US Forest Service, periodically dredge bedload from the Multnomah Creek channel to maintain the artificial channel configuration and elevations. Despite all of the adverse anthropogenic influences on Multnomah Creek, adequate water quality, water quantity and complex habitat features capable of supporting reproducing anadromous fish populations persist.

2.1.3 Analysis of Effects

2.1.3.1 Effects of Proposed Actions

Creeks and rivers are dynamic systems that naturally alter their courses in response to many physical processes. Roadways and other structures constructed along waterways are subject to flooding and undercutting as a result of these natural changes in the stream course. Structural hardening of embankments is the traditional means of protecting these structures along waterways.

Hardened embankments simplify stream channels, alter hydraulic processes, and prevent natural channel adjustments (Spence *et al.* 1996). Moreover, embankment hardening may shift the erosion point either upstream or downstream of the project site and contribute to stream velocity acceleration. As amplified erosive forces attack different locations and landowners respond with more bank hardening, the river eventually attains a continuous, fixed alignment lacking habitat complexity (USACE 1977).

Fish habitats are enhanced by the diversity of habitats at the land-water interface and adjacent bank (USACE 1977). Streamside vegetation provides shade that reduces water temperature. Overhanging branches provide cover from predators. Insects and other invertebrates that fall from overhanging branches may be preyed upon by fish, or provide food sources for other prey organisms. Immersed vegetation, logs, and root wads provide points of attachment for aquatic prey organisms, create shelter from swift currents during high flow events, retain bed load materials, create pools, and reduce flow velocity.

Sedimentation

Potential impacts to listed salmonids from the proposed action include both direct and indirect effects. Potential direct effects include mortality from exposure to suspended sediments (turbidity) and contaminants resulting for construction. Potential indirect effects include behavioral changes resulting from elevated turbidity levels (Sigler *et al.* 1984, Berg and Northcote 1985, Whitman *et al.* 1982, Gregory 1988) during river bank habitat alterations.

Suspended sediment and turbidity influences on fish reported in the literature range from beneficial to detrimental. Elevated total suspended solids (TSS) conditions have been reported to enhance cover conditions, reduce piscivorous fish/bird predation rates, and improve survival. Elevated TSS conditions have also been reported to cause physiological stress, reduce growth, and adversely affect survival. Of key importance in considering the detrimental effects of TSS on fish are the frequency and the duration of the exposure, not just the TSS concentration.

Behavioral avoidance of turbid waters may be one of the most important effects of suspended sediments (DeVore *et al.* 1980, Birtwell *et al.* 1984, Scannell 1988). Salmonids have been observed to move laterally and downstream to avoid turbid plumes (McLeay *et al.* 1984, 1987, Sigler *et al.* 1984, Lloyd 1987, Scannell 1988, Servizi and Martens 1991). Juvenile salmonids tend to avoid streams that are chronically turbid, such as glacial streams or those disturbed by human activities, unless the fish need to traverse these streams along migration routes (Lloyd *et al.* 1987). In addition, a potentially positive reported effect is providing refuge and cover from predation (Gregory and Levings 1988).

Fish that remain in turbid, or elevated TSS, waters experience a reduction in predation from piscivorous fish and birds (Gregory and Levings 1998). In systems with intense predation pressure, this provides a beneficial trade off (*e.g.*, enhanced survival) to the cost of potential physical effects (*e.g.*, reduced growth). Turbidity levels of about 23 Nephalometric Turbidity Units (NTU) have been found to minimize bird and fish predation risks (Gregory 1993). Exposure duration is a critical determinant of the occurrence and importance of physical or behavioral effects (Newcombe and MacDonald 1991). Salmonids have evolved in systems that periodically experience short-term pulses (days to weeks) of high suspended sediment loads, often associated with flood events, and are adapted to such high pulse exposures. Adult and larger juvenile salmonids may be little affected by the high concentrations of suspended sediments that occur during storm and snowmelt runoff episodes (Bjornn and Reiser 1991). However, research shows that chronic exposure can cause physiological stress responses that can increase maintenance energy and reduce feeding and growth (Redding *et al.* 1987, Lloyd 1987, Servizi and Martens 1991).

Turbidity, at moderate levels, has the potential to adversely affect primary and secondary productivity, and at high levels, has the potential to injure and kill adult and juvenile fish, and may also interfere with feeding (Spence *et al.* 1996). Newly-emerged salmonid fry may be vulnerable to even moderate amounts of turbidity (Bjornn and Reiser 1991). Other behavioral effects on fish, such as gill flaring and feeding changes, have been observed in response to pulses of suspended sediment (Berg and Northcote 1985). Fine redeposited sediments also have the

potential to adversely affect primary and secondary productivity (Spence *et al.* 1996), and to reduce incubation success (Bell 1991) and cover for juvenile salmonids (Bjornn and Reiser 1991). Because the potential for turbidity should be localized and brief, the probability of direct mortality is negligible.

Chemical Contamination

As with all construction activities, accidental release of fuel, oil, and other contaminants may occur. Operation of the backhoes, excavators, and other equipment requires the use of fuel, lubricants, *etc.*, which, if spilled into the channel of a waterbody or into the adjacent riparian zone, can injure or kill aquatic organisms. Petroleum-based contaminants (such as fuel, oil, and some hydraulic fluids) contain poly-cyclic aromatic hydrocarbons (PAHs), which can be acutely toxic to salmonids at high levels of exposure and can also cause chronic lethal and acute and chronic sublethal effects to aquatic organisms (Neff 1985). Similarly, exposure to herbicides can have lethal and sublethal effects on salmonids, aquatic invertebrates, aquatic vegetation, and target and non-target riparian vegetation (Spence *et al.* 1996).

Construction-related effects necessary to complete the proposed action will be minimized by completing the in-water work during low flow periods. The flowing water of Wahkeena Creek will be diverted around the work area before operation of construction equiptment within the Wahkeena Creek channel.

Vegetation Removal

The construction of access roads may result in some native and non-native riparian vegetation removal. Site restoration and replanting will help to offset the loss of any functional benefits associated with necessary vegetation removal. Temporary increases in water temperature may result as a result of vegetation removal.

Fish Passage

Although the initial risk of increasing the likelihood of subsurface flow through the new roughened chute channel may inhibit upstream or downstream fish passage at low flows, the proposed action will result in improved long-term and year-round fish passage conditions for both adult and juvenile salmonids and native fishes, including LCR chinook salmon and steelhead, within the action area. As a direct result, long-term, beneficial effects to fish passage are expected to persist at the Wahkeena Creek culvert.

Fish Rescue, Salvage and Relocation

As a result of the proposed action, culvert retrofit and repair activities would be isolated from flowing water, and fish would be relocated as described above in section 1.2.1. The COE has estimated the lethal and non-lethal take of listed salmonids likely to be captured and released, from the following ESUs: (1) LCR chinook salmon, and (2) LCR steelhead. Rescue, salvage, and relocation of fish and other aquatic species would result in the potential capture and handling of up to 270 juvenile listed salmonids. Assuming up to a 10% direct or delayed mortality rate from capture and relocation stress, up to 27 juvenile LCR chinook salmon or LCR steelhead may be killed.

2.1.3.2 Effects on Critical Habitat

NOAA Fisheries designates critical habitat based on physical and biological features that are essential to the listed species. Essential features for designated critical habitat include substrate, water quality, water quantity, water temperature, food, riparian vegetation, access, water velocity, space and safe passage. Effects on critical habitat from the proposed action are included in the effects description, above.

2.1.3.3 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as those effects of "future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation". Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being (or have been) reviewed through separate section 7 consultation processes. Therefore, these actions are not considered cumulative to the proposed actions.

NOAA Fisheries is not aware of any specific future non-Federal activities within the action area that would cause greater impacts to listed species than presently occurs. However, development of structures and vegetation clearing along the streams is likely to continue. NOAA Fisheries assumes that future private and state actions will continue at similar intensities as in recent years.

2.1.4 Conclusion

NOAA Fisheries has determined that, based on the available information, the proposed action is not likely to jeopardize the continued existence of CR chum salmon, LCR steelhead, or LCR chinook salmon. NOAA Fisheries used the best available scientific and commercial data to analyze the effects of the proposed action on the biological requirements of the species relative to the environmental baseline, together with cumulative effects. NOAA Fisheries applied its evaluation methodology to the proposed action and found that it could cause slight, short-term degradation of anadromous salmonid habitat due to increases in sedimentation, turbidity, and temperature. Furthermore, NOAA Fisheries expects that construction related effects and work isolation activities could alter normal feeding and sheltering behavior of juvenile LCR steelhead, LCR chinook salmon, or CR chum salmon should any be present in the action area during the proposed action. NOAA Fisheries expects some direct or delayed mortality of juvenile LCR steelhead, LCR chinook salmon, or CR chum salmon as a result of fish rescue, salvage and relocation activities should any be present in the action area during the proposed action. NOAA Fisheries expects long-term, beneficial effects of improved fish passage and hydraulic conditions to result the Wahkeena Creek culvert repair and retrofit activities.

NOAA Fisheries' conclusions are based on the following considerations: (1) Most of the proposed work will occur outside of the flowing waters of Wahkeena Creek (*i.e.*, in the dry); (2) in-water work will occur during the ODFW preferred in-water work period of July 15 through August 31, which NOAA Fisheries expects to minimize the likelihood of LCR steelhead, LCR

chinook salmon, CR chum salmon presence in the action area due to low flow conditions; (3) any increases in sedimentation and turbidity in the project reach of Wahkeena Creek will be short-term and minor in scale, and would not change or worsen existing conditions for stream substrate in the action area; and (4) long-term, beneficial effects will result from the repair and retrofit of the Wahkeena Creek Intersate 84 culvert. Thus, the proposed action is not expected to impair properly functioning habitats, appreciably reduce the functioning of already impaired habitats, or retard the long-term progress of impaired habitats toward proper functioning condition essential to the long-term survival and recovery at the population or ESU level.

2.1.5 Reintiation of Consultation

This concludes formal consultation on the Wahkeena Creek/Interstate 84 Fish Passage Project. As provided in 50 CFR 402.16, reintiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and if: (1) The amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this Opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this Opinion; or (4) a new species is listed or critical habitat is designated that may be affected by the action. In instances where the amount or extent of authorized incidental take is exceeded, any operations causing such take must cease pending reintiation of consultation.

2.2 Incidental Take Statement

Section 9 and rules promulgated under section 4(d) of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering. "Harass" is defined as actions that create the likelihood of injuring listed species by annoying it to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. "Incidental take" is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

An incidental take statement specifies the impact of any incidental taking of threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply to implement the reasonable and prudent measures.

2.2.1 Amount or Extent of the Take

NOAA Fisheries anticipates that the actions covered by this Opinion are reasonably certain to result in incidental take of LCR steelhead or LCR chinook salmon because of harm from increased sediment levels, chemical contamination, temperature increases, and the potential for direct incidental take during in-water work. Handling of juvenile steelhead or chinook salmon during the work isolation process may result in incidental take of individuals if juvenile salmonids are present during the construction period. Based on analysis in the BA, NOAA Fisheries anticipates non-lethal incidental take of up to 270 individuals, of which, lethal take of 27 juvenile steelhead or chinook salmon could occur as a result of the fish rescue, salvage, and relocation activities covered by this Opinion. The potential adverse effects of the other project components on population levels are largely unquantifiable and NOAA Fisheries does not expect them to be measurable in the long term. The extent of authorized take is limited to LCR steelhead or LCR chinook salmon in Wahkeena Creek and is limited to that caused by the proposed action within the action area.

2.2.2 Reasonable and Prudent Measures

The measures described below are non-discretionary. They must be implemented so that they become binding conditions in order for the exemption in section 7(a)(2) to apply. The COE has the continuing duty to regulate the activities covered in this incidental take statement. If the COE fails to adhere to the terms and conditions of the incidental take statement through enforceable terms added to the document authorizing this action, or fails to retain the oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(a)(2) may lapse.

NOAA Fisheries believes that the following reasonable and prudent measures are necessary and appropriate to minimize take of the above species. The COE shall:

1. Minimize the likelihood of incidental take from culvert retrofit and repair actions by directing the contractor to use an approach that maximizes ecological functions.

2. Minimize the likelihood of incidental take from activities involving temporary access roads, use of heavy equipment, earthwork, or site restoration, or that may otherwise involve in-water work or affect fish passage by directing the contractor to avoid or minimize disturbance to riparian and aquatic systems. Ensure in-water work activities (*e.g.*, culvert retrofit and repair) are isolated from flowing water.

3. Complete a comprehensive monitoring and reporting program to ensure implementation of these conservation measures are effective in minimizing the likelihood of take from permitted activities.

4. Complete any remedial reconstruction or repairs to the fish passage aspects of the culvert retrofit to provide and maintain fish passage as necessary.

2.2.3 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, the COE must comply with the following terms and conditions, which implement the reasonable and prudent measures described above for each category of activity.

1. To implement reasonable and prudent measure #1 (culvert retrofit and repair), the COE shall ensure that:

    a. The use of rock and riprap is minimized.
    b. Rock will be individually placed in a way that produces an irregularly-contoured surface to provide velocity disruption. No end dumping will be allowed except into the dewatered portion of the roughened chute footprint or along the highway, with individual final rock placement.
    c. Any instream large wood or riparian vegetation that is moved or altered during construction will stay on site or be replaced with a functional equivalent.
    d. The bankline will be revegetated using natural vegetation.
    e. Implement modifications to project design as necessary during or after construction to ensure the roughened chute provides maximum fish passage function. Triggers indicating need for design modifications shall include but are not limited to:
        i. The rock ramp scouring out (it may be required to install a 3% ramp that would extend much further from the culvert)
        ii. Surface flow escaping into the ramp subgrade excessively
        iii. Low flow inspection indicating situations that require fish to jump more that six inches, depths less than six inches (unless the stream itself, downstream of the project, has less depth), or velocities exceeding six feet per second in principal migratory corridors such as chutes or cascades.

2. To implement reasonable and prudent measure #2 (construction and in-water work), the COE shall ensure that:

    a. Project design. Alteration or disturbance of the streambanks and existing riparian vegetation will be minimized.
    b. In-water work. All in-water work activities would occur during the standard in-water work timing guideline of July 15 through August 31. Any extensions or alterations to the standard in-water work timing would require the written concurrence of a NOAA Fisheries biologist.
    c. Pollution and erosion control plan. A pollution and erosion control plan (PECP) will be developed for the project to prevent point-source pollution related to construction operations. The PECP will contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations.

i. Methods that will be used to prevent erosion and sedimentation associated with access roads, construction sites, equipment and material storage sites, fueling operations, and staging areas.

ii. A description of the hazardous products or materials that will be used, including inventory, storage, handling, and monitoring.

iii. A spill containment and control plan with notification procedures, specific cleanup and disposal instructions for different products, quick response containment and cleanup measures that will be available on site, proposed methods for disposal of spilled materials, and employee training for spill containment.

iv. Measures that will be taken to prevent construction debris from falling into any aquatic habitat. Any material that falls into a stream during construction operations will be removed in a manner that has minimum impact on the streambed and water quality.

d. Pre-construction activities. Before significant alteration of the action area, the following actions will be accomplished:

i. Boundaries of the clearing limits associated with site access and construction are flagged to prevent ground disturbance of critical riparian vegetation, wetlands and other sensitive sites beyond the flagged boundary.

ii. A supply of erosion control materials (*e.g.* silt fence and straw bales) is on hand to respond to sediment emergencies. Sterile straw or hay bales will be used when available to prevent introduction of weeds.

iii. All temporary erosion controls (*e.g.* straw bales, silt fences) are in place and appropriately installed downslope of project activities within the riparian area. Effective erosion control measures will be in place at all times during the contract, and will remain and be maintained until such time that permanent erosion control measures are effective.

e. Earthwork. Earthwork, including excavation, filling, and compacting, is completed in the following manner:

i. Boulders, rock, woody materials and other natural construction materials used for the project must be obtained from outside of the riparian area or as otherwise approved in writing by NOAA Fisheries.

ii. Material removed during excavation will only be placed in locations where it cannot enter streams or other water bodies.

iii. All exposed or disturbed areas will be stabilized to prevent erosion.

(1) Areas of bare soil within 150 feet of waterways, wetlands or other sensitive areas will be stabilized by native seeding, mulching, and placement of erosion control blankets and mats (if applicable) as quickly as reasonable after exposure, but within seven days of exposure.

(2) All other areas will be stabilized as quickly as reasonable, but within 14 days of exposure.

(3) Seeding outside of the growing season will not be considered adequate for permanent stabilization.

f. Heavy Equipment. Heavy equipment will be fueled, maintained, and stored as follows:

i. Vehicle staging, maintenance, refueling, and fuel storage areas will be a minimum of 150 feet horizontal distance from any stream unless a specific written containment and spill prevention plan is approved, in writing, by NOAA Fisheries.

ii. All vehicles operated within 150 feet of any stream or waterbody will be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected will be repaired before the vehicle resumes operation.

iii. When not in use, vehicles will be stored in the vehicle staging area.

g. Site restoration. Site restoration and clean-up, including protection of bare earth by seeding, planting, mulching and fertilizing, will be done in the following manner:

i. Disturbed areas will be planted with native vegetation specific to the project vicinity or the region of the state where the project is, and will comprise a diverse assemblage of woody and herbaceous species.

ii. No herbicide application will occur as part of this permitted action. Mechanical removal of undesired vegetation and root nodes is permitted.

iii. No surface application of fertilizer will be used within 50 feet of any stream channel as part of this permitted action.

iv. Plantings will achieve 80% survival or 80% cover success after five years within the natural vegetation zone at the project site.

(1) If this success standard has not been achieved after five years, the applicant will submit an alternative plan to NOAA Fisheries. The alternative plan will address temporal loss of function.

(2) Plant establishment monitoring will continue and plans will be submitted to the NOAA Fisheries until site restoration success has been achieved.

h. If the fish salvaging aspect of this project requires the use of seine equipment to capture fish, it must be accomplished as follows:

i. Before and intermittently during pumping, attempts will be made to seine and release fish from the work isolation area as is prudent to minimize risk of injury.

ii. Seining will be conducted by (or under the supervision of) a fishery biologist experienced in such efforts. Staff working with the seining operation must have the necessary knowledge, skills, and abilities to ensure the safe handling of all ESA-listed fish.

iii. ESA-listed fish must be handled with extreme care and kept in water to the maximum extent possible during seining and transfer procedures. The transfer of ESA-listed fish must be conducted using a sanctuary net that holds water during transfer, whenever appropriate, to prevent the added stress of an out-of-water transfer.

iv. Seined fish must be released as near as possible to capture sites.

v. The COE shall ensure that the transfer of any ESA-listed fish to third parties other than NOAA Fisheries personnel receives prior approval from NOAA Fisheries.

vi. The COE shall ensure that any other Federal, state, and local permits and authorizations necessary for the conduct of the seining activities will be obtained before project seining activity.

vii. The COE must allow NOAA Fisheries or its designated representative to accompany field personnel during the seining activity, and allow such representative to inspect the seining records and facilities.

viii. A description of any seine-and-release effort will be included in a post-project report, including the name and address of the supervisory fishery biologist, methods used to isolate the work area and minimize disturbances to ESA-listed species, stream conditions before and following placement and removal of barriers, the means of fish removal, the number of fish removed by species, the condition of all fish released, and any incidence of observed injury or mortality.

i. If the fish salvaging aspect of this project requires the use of electrofishing equipment to capture fish, it must be accomplished as described in NOAA Fisheries' electrofishing guidelines.

3. To implement reasonable and prudent measure #3 (monitoring and reporting), the COE shall ensure that:

a. A joint inspection will occur with NOAA Fisheries, ODFW, and the ODOT hydraulic engineer of record to evaluate the constructed product for fish passage adequacy within one month of project competition.

b. Within 120 days of completing the project, the COE shall ensure submittal of a monitoring report to NOAA Fisheries describing the COE's success meeting their permit conditions. This report will consist of the following information:

i. Project identification.

(1) Project name.

(2) Starting and ending dates of work completed for this project.

(3) The COE contact person.

ii. <u>Isolation of in-water work area.</u> All projects involving isolation of in-water work areas must include a report of any seine-and-release activity including:

(1) The name and address of the supervisory fish biologist,

(2) Methods used to isolate the work area and minimize disturbances to fish species.

(3) Stream conditions before and following placement and removal of barriers.

(4) The means of fish removal.

(5) The number of fish removed by species.

(6) The location and condition of all fish released.
(7) Any incidence of observed injury or mortality.

iii. Pollution and erosion control. A summary of all pollution and erosion control inspection reports, including descriptions of any failures experienced with erosion control measures, efforts made to correct them and a description of any accidental spills of hazardous materials.

iv. Site restoration. Documentation of the following conditions:
(1) Finished grade slopes and elevations.
(2) Log and rock structure elevations, orientation, and anchoring, if any.
(3) Planting composition and density.
(4) A plan to inspect and, if necessary, replace failed plantings and structures for a period of five years.

v. A narrative assessment of the effects of the project on natural stream function and fish passage.

vi. Photographic documentation of environmental conditions at the project site before, during and after project completion.
(1) Photographs will include general project location views and close-ups showing details of the project area and project, including pre- and post-construction.
(2) Each photograph will be labeled with the date, time, photo point, project name, the name of the photographer, and a comment describing the photograph's subject.
(3) Relevant environmental conditions include characteristics of channels, streambanks, riparian vegetation, flows, water quality, and other visually discernable environmental conditions at the project area, and upstream and downstream of the project.

c. On an annual basis, for five years after completing the project, the COE shall ensure submittal of a monitoring report to NOAA Fisheries describing the success in meeting fish passage and site restoration goals. This report will consist of the following information:

i. Project identification.
(1) Project name.
(2) Starting and ending dates of work completed for this project.
(3) The COE contact person.

ii. Site restoration. Documentation of the following conditions:
(1) Any changes in log and rock structure elevations, orientation, and anchoring.
(2) Any changes in planting composition and density.
(3) A plan to inspect and, if necessary, replace failed plantings and repair the roughened chute or culvert retrofit. Triggers indicating need for post-construction repairs shall include but are not limited to:

(a) The rock ramp scouring out (it may be required to install a 3% ramp that would extend much further from the culvert).
(b) Surface flow escaping into the ramp subgrade excessively.
(c) Low flow inspection indicating situations that require fish to jump more that six inches, depths less than six inches (unless the stream itself, downstream of the project, has less depth), or velocities exceeding six feet per second in principal migratory corridors such as chutes or cascades.

iii. A narrative assessment of the effects of the project on natural stream function and fish passage with specific discussion on evaluation of the need for post-construction repairs indicated above.

iv. Photographic documentation of environmental conditions at the project site after project completion as they relate to fish passage and site restorations goals as described above.
(1) Photographs will include general project location views and close-ups showing details of the project area and habitat features of the channel relocated reaches.
(2) Each photograph will be labeled with the date, time, photo point, project name, the name of the photographer, and a comment describing the photograph's subject.
(3) Relevant habitat conditions include characteristics of channels, streambanks, riparian vegetation, flows, water quality, and other visually discernable environmental conditions at the project area, as they relate fish passage and site restorations goals.

d. Submit monitoring reports to:

NOAA's National Marine Fisheries Service
Oregon Habitat Branch, Habitat Conservation Division
Attn: 2002/01501
525 NE Oregon Street, Suite 500
Portland, OR 97232-2778

e. If a dead, injured, or sick endangered or threatened species specimen is found, initial notification must be made to the NOAA Fisheries Law Enforcement Office, Vancouver Field Office, 600 Maritime, Suite 130, Vancouver, Washington 98661; phone: 360.418.4246. Care will be taken in handling sick or injured specimens to ensure effective treatment and care or the handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured endangered and threatened species or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

4. To implement reasonable and prudent measure #4 (remedial actions), the COE shall ensure that reconstruction or repairs to the fish passage aspects of the roughened chute or culvert retrofit to provide and maintain fish passage occur as necessary. Triggers indicating need for post-construction repairs shall include but are not limited to:
   a. The rock ramp scouring out (it may be required to install a 3% ramp that would extend much further from the culvert).
   b. Surface flow escapeing into the ramp subgrade excessively.
   c. Low flow inspection indicating situations that require fish to jump more that six inches, depths less than six inches (unless the stream itself, downstream of the project, has less depth), or velocities exceeding six feet per second in principal migratory corridors such as chutes or cascades.

3. MAGNUSON-STEVENS ACT

3.1 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-297), requires the inclusion of EFH descriptions in Federal fishery management plans. In addition, the MSA requires Federal agencies to consult with NOAA Fisheries on activities that may adversely affect EFH.

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting the definition of EFH: Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50CFR600.110).

Section 305(b) of the MSA (16 U.S.C. 1855(b)) requires that:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH.
- NOAA Fisheries shall provide conservation recommendations for any Federal or State activity that may adversely affect EFH.
- Federal agencies shall within 30 days after receiving conservation recommendations from NOAA Fisheries provide a detailed response in writing to NOAA Fisheries regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations of NOAA Fisheries, the Federal agency shall explain its reasons for not following the recommendations.

The MSA requires consultation for all actions that may adversely affect EFH, and does not distinguish between actions within EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and upslope activities, that may have an adverse effect on EFH. Therefore, EFH consultation with NOAA Fisheries is required by Federal agencies undertaking, permitting or funding activities that may adversely affect EFH, regardless of its location.

3.2 Identification of EFH

The Pacific Fisheries Management Council (PFMC) has designated EFH for federally-managed fisheries within the waters of Washington, Oregon, and California. The designated EFH for groundfish and coastal pelagic species encompasses all waters from the mean high water line, and upriver extent of saltwater intrusion in river mouths, along the coasts of Washington, Oregon and California, seaward to the boundary of the U.S. exclusive economic zone (370.4 km)(PFMC 1998a, 1998b). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years)(PFMC 1999). In estuarine and marine areas, designated salmon EFH extends from the nearshore and tidal submerged environments within state territorial waters out to the full extent of the exclusive economic zone (370.4 km) offshore of Washington, Oregon, and California north of Point Conception to the Canadian border.

Detailed descriptions and identifications of EFH for the groundfish species are found in the Final Environmental Assessment/Regulatory Impact Review for Amendment 11 to *The Pacific Coast Groundfish Management Plan* (PFMC 1998a) and the *NOAA Fisheries Essential Fish Habitat for West Coast Groundfish Appendix* (Casillas *et al.* 1998). Detailed descriptions and identifications of EFH for the coastal pelagic species are found in Amendment 8 to the *Coastal Pelagic Species Fishery Management Plan* (PFMC 1998b). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the *Pacific Coast Salmon Plan* (PFMC 1999). Assessment of the potential adverse effects to these species' EFH from the proposed actions is based on this information.

3.3 Proposed Actions

The proposed actions are detailed above in section 1.2. The action area includes designated critical habitat affected by the proposed action along Wahkeena Creek at its confluence with the Columbia River. This area has been designated as EFH for various life stages of chinook and coho salmon and starry flounder (*Platyichthys stellatus*).

3.4 Effects of Proposed Action

As described in detail in section 2.1.3.1 of this document, the proposed activities may result in short-term adverse effects to water quality (sediment and chemical contamination). Long-term beneficial effects are likely from fish passage and improved hydraulic conditions within the structure.

1. Sedimentation. Excavation and fill of the streambank in the wetted channel during construction of the roughened chute culvert retrofit and culvert repairs will result in short-term releases of sediment. An increase in turbidity can impact fish and filter-feeding macroinvertebrates downstream of the work site.

2. Chemical Contamination. As with all construction activities, accidental release of fuel, oil, and other contaminants may occur.

3. Vegetation Removal. Minor amounts of riparian vegetation will be removed, and extensive willow plantings will more than offset any short-term adverse effects to habitat.

4. Fish Passage. In the short-term, fish passage may inhibited during periods of subsurface flows through the roughened chute design. However, the proposed action would result in long-term benefits through year-round adult and juvenile upstream fish passage.

3.5 Conclusion

The proposed action will adversely affect the EFH for chinook and coho salmon.

3.6 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations for any Federal or state agency action that would adversely affect EFH. The conservation measures proposed for the project by the Corps and all of the reasonable and prudent measures and the terms and conditions contained in sections 2.2.2 and 2.2.3 are applicable to EFH. Therefore, NOAA Fisheries incorporates each of those measures here as EFH conservation recommendations.

3.7 Statutory Response Requirement

Please note that the MSA (section 305(b)) and 50 CFR 600.920(j) requires the Federal agency to provide a written response to NOAA Fisheries after receiving EFH conservation recommendations within 30 days of its receipt of this letter. This response must include a description of measures proposed by the agency to avoid, minimize, mitigate or offset the adverse impacts of the activity on EFH. If the response is inconsistent with a conservation recommendation from NOAA Fisheries, the agency must explain its reasons for not following the recommendation.

3.9 Supplemental Consultation

The COE must reinitiate EFH consultation with NOAA Fisheries if either action is substantially revised or new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920).

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